

# Brazing for Furnace Components

## Materials Resources International (MRi)

North Wales, PA



### INNOVATION

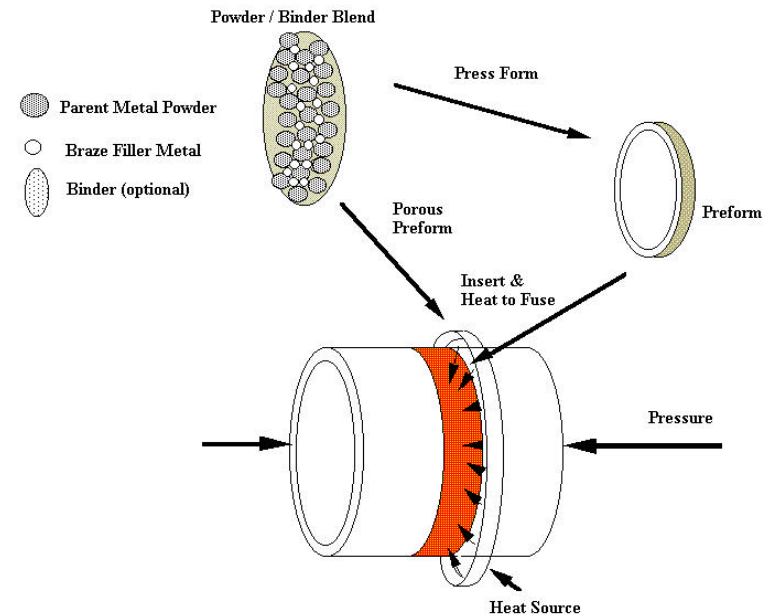
WideGap™ brazing technology is a powder based/braze alloy preform that permits high temperature brazing for joining dissimilar, refractory and/or refractory composite materials.

### ACCOMPLISHMENTS

- ◆ Developing braze techniques for the fabrication of a furnace for space experimentation. Furnace temperatures of 1000 - 1450°C have been targeted in which Fe, Mg, and SiO<sub>2</sub> materials will be rapidly heated and vaporized in argon atmospheres.
- ◆ MRi has proven the feasibility of brazing graphite to molybdenum, graphite to alumina and molybdenum to alumina.
- ◆ Project is developing several preform methods: paste, tapes, press and sinter, and hot isostatic pressing.

### COMMERCIALIZATION

- ◆ Developed five new materials systems (Cu Ti-Mo, BNi5-Ti-Mo, NiCr-Ti-Mo, BNi-5-Ti-SiC, & NiCr-Ti-SiC).
- ◆ MRi has received two commercial orders, one from Lockheed Martin and the other from EG&G Sealol.
- ◆ Market potential for such brazing preforms exceeds \$25M annually with applications in chemical, power generation, aerospace, and cutting/tooling industries.
- ◆ 1998 Sales of \$30K, expected 1999 sales \$75K.



### GOVERNMENT SCIENCE/APPLICATIONS

- ◆ The project goal is to use MRi's WideGap™ brazing technology to fabricate heating elements and crucibles for constructing integral furnaces for Space Shuttle experiments.
- ◆ Other applications include rocket engine ducts and nozzles.

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